Alternative routes from vocational education to the labour market

NO. 72

Alternative Routes from Vocational Education to the Labour Market.

Rolf van der Velden and
Bob Lodder

Published in:

Educational Research and Evaluation,
1995, Vol. 1, No. 2, pp. 109-128.

Educational Research and Evaluation
1995, Vol. 1, No. 2, pp. 109-128

1380-3611/95/0102-0109$6.00

Alternative Routes from Vocational Education to the Labour Market. Labour Market Effects of Full-time vs. Dualized Vocational Education*

Rolf van der Velden and Bob Lodder
Faculty of Economics and Business Administration, University of Limburg

ABSTRACT

This article addresses the labour market effects of two rather different forms of vocational education, full-time education with practice periods that have no employment status versus dualized education with an emphasis on continuous on-the-job/in-service training and employee status for the apprentice. Although most developed countries know both forms of vocational education, these usually have clearly different positions in a qualitative (standardization of curricula and degrees) and a quantitative (cohort shares) sense. The Netherlands present an interesting case, because in this country both systems coexist and contribute largely to the vocational training of each new generation. That provides a good opportunity for investigating differences in the labour market effects of these 'treatments' in vocational education. In this article, differences in labour market careers (i.e. the chances of getting promoted or getting unemployed) between graduates from full-time vocational education and from the dual system are explored, using event history analysis. The results show that graduates from full-time tracks have higher chances of getting promoted. However, the period of transition to the labour market is very unstable, involving job shifts and periods of unemployment. Graduates from the dual system on the other hand experience a more stable period of labour market entry. At the same time their careers often involve many dead-end jobs, from which no promotion takes place. Moreover, they have difficulty in transfering their skills to other sectors than the sector for which they are trained.

*This article was presented at the ESF Network 'Transitions in Youth' conference in Seelisberg, Switzerland (September, 1994).

All correspondence should be sent to: Rolf van der Velden, Research Centre for Education and the Labour Market (ROA), Faculty of Economics and Business Administration, University of Limburg, P.O. Box 616, 6200 MD Maastricht, the Netherlands.

Manuscript submitted: October 5, 1994
Accepted for publication: May 2, 1995

INTRODUCTION

This article addresses the labour market effects of two rather different forms of vocational education, full-time education with practice periods that have no employment status versus dualized education with an emphasis on continuous on-the-job/in-service training and employee status for the apprentice. Although most developed countries know both forms of vocational education, these usually have clearly different positions in a qualitative (standardization of curricula and degrees) and a quantitative (cohort shares) sense. Germany, for example, has a strongly developed system of dualized education that has a dominant position over its full-time counterpart. In the USA, on the other hand, most young people enter the labour market from full-time forms of education whereas vocational tracks have hardly been developed.

The Netherlands presents an interesting case, because in this country both systems coexist and contribute largely to the vocational training of each new generation. This provides a good opportunity for investigating differences in the labour market effects of these 'treatments' in vocational education. More specifically, we address the following question in this article: Is there a difference in labour market careers (i.e. the chances of getting promoted or getting unemployed) between graduates from full-time vocational education and graduates from the dual system?

The relevance of such an analysis is clear. Since the late eighties, educational policy has strongly been oriented towards 'dualization' of the educational system. The basic idea is that mismatches on the labour market can be prevented by introducing some characteristics of the dual system into full-time vocational education. This would imply that labour market careers of graduates from the dual system involve less problems than those of the graduates from full-time education. The present analysis may show whether these differences in labour market effects are indeed present.

THEORY

Theoretical hypotheses about the labour market effects of the two types of training can be found in different labour market theories, concerning both the entry of new people on the labour market as well as mobility and career development.

Job search theories (Viscusi, 1983; McKenna, 1985) point out that the labour market entry of graduates is a turbulent period: it takes some time

before a good match has been established and there are indications that since the late 70's this period of entry in the labour market has become more and more difficult (Germe, 1986; Raffe, 1988). In this respect a major difference occurs between the full-time and the dualized system. For graduates of the latter, the period of job search precedes the start of their training course. In fact, a good job match is a prerequisite for entering the dualized system. Therefore, the occupational career in the first years after graduation will be more stable for graduates of the dualized system, and they are more likely to experience a good job match. In the long run these differences will diminish as the graduates of the full-time education will also have reached a more stable stage in their careers.

Our research uses a 'labour queue' framework (Thurow, 1975) to describe the careers. Employers are supposed to rank applicants for a job according to their assessed training costs for the job. Not only individuals hold a position on the labour market, types of training can also be said to hold a position on the labour market. Glebbeek (1988) indicates that for large parts of the labour market – those sectors facing efficiency pressures – the relative position of a type of training is determined by the expected training costs of the graduates. These training costs consist of three components:

* exclusiviness: the extent to which a type of training has an advantage in the exclusive supply of the required skills for a certain function;
* mediocrity risks: the extent to which the graduates vary in terms of their control of the required skills, in combination with the sensitivity of the function to this variation;
* learning ability: the average expected learning ability of the graduates of a given type of training.

According to Glebbeek, the labour market position of a type of training is better when its exclusivity is high, the mediocrity risk low, and the average learning ability is good. Conversely, the less advantage a training offers in the exclusive supply of the required skills, the more sensitive its labour market position will be to indications of the learning ability and quality variation of its graduates.

With regard to the relative position of the full-time and the dualized system on the labour market, two training cost components seem particularly important: the extent to which graduates master the required qualifications, and their expected general learning ability. It can be stated that graduates of the dualized system generally have a better mastery of specific occupational skills, while graduates of full-time tracks have greater learning abilities. Both components play an important role in the person-

nel selection process. While to some extent they can compensate for each other, the relative weights given to them by employers will differ between segments of the labour market. In those segments of the labour market where craftmanship is required (the so-called 'fächliche Teilarbeitsmärkte' according to Lutz and Sengenberger, 1974), the emphasis in the selection process is on the mastery of specific occupational skills. In these segments, graduates of the dualized system have an advantage and (involuntary) mobility has no negative implications. In the firm specific segments of the labour market ('betriebliche Teilarbeitsmärkte'), however, the emphasis is on the long-term trainability of the labour force. In these segments, mobility is likely to have negative consequences for the occupational career. Here, graduates of full-time vocational education have an advantage. The same will hold for those segments of the labour market where rapid technological change takes place and therefore skills are subject to obsolescence.

DATA

In 1987-1989 the Institute for Educational Research, RION, University of Groningen, carried out a large research to examine the differences between the occupational careers from graduates of both full-time and dualized education. The major aim of the project was to get a clear view on the long term differences in labour market position between graduates from these two types of education (Van der Velden et al., 1989).

As pointed out before, short-term differences between the two systems are partly artificial: a good job match is a prerequisite for entering the dual system. It was therefore decided to investigate the labour market careers that take place in the first 5 or 6 years after leaving education. In this way one can take account for most of the changes in the occupational careers (Topel & Ward, 1988), while on the other hand changes in the education and training system have not been so drastic as to make the results useless.

Some 4000 graduates were retrospectively investigated, all of whom graduated in 1981 or 1982. As the graduates left school 5 or 6 years before, some 10% of them could not be traced, even after checking with the registry of the municipalities. Questionnaires were mailed to the remaining graduates in the fall of 1987. The response was 69%. From those who responded, more than 800 turned out to have followed further education. They were excluded from the following analysis. For a large part, these people came from full-time education. In this respect, chances on

educational progression constitute a major difference between full-time and dualized tracks, with full-time tracks offering far better chances on further education. This difference should be kept in mind when discussing the results, because these are restricted to the direct labour market effects, rather than the educational effects.

A selection was made of equivalent vocational courses aiming at the following economic sectors: metal industry, building & construction, printing industry and health care. In order to make a good comparison, the selected courses from the dual system are all from the secondary level[1]. The four selected sectors represent different segments of the labour market and also show different rates of technological change.

The metal industry has faced a rapid technological change (Beun et al., 1985), which is accompanied by an increase of the qualification requirements by employers (OSA/CPB, 1988). As a result of the technological changes and the trend towards firm specialisation, these qualification requirements have to a certain extent a firm specific character (Kayzel & Van Wel, 1985). The same situation applies to the printing industry: rapid technological changes (Poutsma & Zwaard, 1987), accompanied by a trend towards firm specific qualification requirements (Kayzel, 1985; Engbers, 1987).

The other two sectors, building & construction and health care, represent the more traditional segments for 'craftsmen', where technological change has been very modest, at least for the jobs at an intermediary level (Bremer, 1986; COB/SER, 1986). The required qualifications have a craft specific character.

The employment situation in the four sectors differs greatly. The building & construction sector and the metal industry have shown a sharp decrease in the number of people employed, involving mass firing in the early 80's. The employment situation in the printing industry has shown a more modest development, while in health care the number of people employed has been growing.

Considering the arguments in the previous section, one would therefore expect that graduates from the dual system run the greatest risks of skills obsolescence and underemployment in the metal industry where technological change has been great and the employment situation unfavourable. The health care can be considered as the sector where graduates from the dual system hold a relatively strong position.

MODEL OF ANALYSIS

We use event-history analysis to examine the labour market careers of the different groups of graduates. Each individual career is broken down into different job spells. Two different types of analysis were performed. The first analysis involves the type of transition that takes place. The following three types of transition between jobs are examined: rise of the level of the function (promotion), decline of the level of function (demotion) and job change within the same level of the function (horizontal mobility). The second analysis involves the chances of getting unemployed.

According to Allison (1984) it is allowed to analyse each type of mobility with a different hazard rate model. This corresponds with the fact that the likelihood of a model with both repeated events and competing risk can be factorized into several standard hazard rate models (Blossfeld, Hamerle & Mayer, 1986). In the estimation of one type of mobility (e.g. promotion), the two other types (in this case horizontal mobility and demotion) are treated as censored observations. We make use of the familiar Cox proportional hazard model, as this model makes no specific assumptions on the time-dependency. We define the hazard rate as:

$$h_j(t|x) = h(t)*\exp(x'b) \qquad j=I,II,III$$

where the hazard $h_j(t|x)$ is the conditional probability that an event of type j (one of the three types of mobility) takes place, given the fact that the event has not yet occurred at time t. In the proportional hazard model, we need only to estimate the partial likelihood in order to get information on the parameters b. Therefore it is not necessary to specify the baseline hazard h(t).

In the analyses we will estimate models for the total group, as well as separate models for full-time education and dual education. In this way we can take account of possible interaction effects, that is, differences in the parameters between the two groups.

In the analyses we use 12 exogenous variables (see Appendix). Among the personal characteristics we include the respondent's sex and age, with age modelled as a time dependent variable. The variable age is included in a linear and a squared form to take account of decreasing age effects on mobility (Blossfeld, 1987). A dummy for military service is included to account for disruption of the occupational career.[2]

The next set of variables describes the respondent's qualifications, starting with dummies referring to the particular type of training followed (mechanical engineering in the dual system serves as the reference group).

Three variables describe the preliminary education of the respondent: the level and certification of the preliminary education and a variable indicating whether the respondent ever repeated class during preliminary education.

Two variables refer to the labour force experience of the respondent (Allmendinger, 1988), one indicating the experience before leaving education and the other indicating the experience since the start of the first job spell. The latter is modelled as a time dependent variable and is included in a linear and a squared form.

The next set of variables refers to the characteristics of the job from which transition is to take place. The first variable indicates the level of the job, defined as the level of skills required to perform the job in question (according to Huijgen, 1989). The second indicates whether the sector in which the respondent is working corresponds to the sector he was trained for.

The last set of variables refers to the economic situation: the region in which the respondent is living and the general employment situation as indicated in the yearly unemployment figures of the Ministery of Social Affairs and Employment (1990), modelled as a time dependent variable.

ANALYSIS

Each individual career is broken down into different job spells. In total there were 1503 graduates included in the analysis[3], who held 2977 different job spells.

Table 1 shows how these 2977 spells can be classified according to their type of transition[4]. The main type of mobility is a change of job

Table 1. Types of Mobility.

Type of mobility	Total number	Full-time education	Dual education
I Rise of the level of the function	360	288	72
II No change in the level of the function	874	494	380
III Decline in the level of the function	240	165	75
Censored observation	1503	880	623
Total number of job spells	2977	1827	1150

within the same level, followed by upward mobility. In the case of full-time education, downward mobility is by far outnumbered by upward mobility. For graduates of the dual system, the dominant type is horizontal mobility and small equal shares for upward and downward mobility.

Table 2 presents the results of the analysis on the chance of getting promoted, that is, the hazard of experiencing a transition to a job with a higher level (that is higher than the present job) at time t+1, given the fact that such a transition has not yet occurred at time t. As stated before, the

Table 2. Rise of Job Level.

Explanatory variables	full-time education		dual education		total group	
	b	se	b	se	b	se
Male	-0.179	(0.29)	0.617	(0.58)	-0.011	(0.26)
Age	0.738*	(0.38)	1.165*	(0.53)	0.226	(0.22)
Age2	-0.014	(0.01)	-0.022*	(0.01)	-0.004	(0.00)
Mech. Eng. Full	–	–	–	–	0.845*	(0.37)
Civ. Eng. Full	0.023	(0.16)	–	–	0.890*	(0.38)
Civ. Eng. Dual	–	–	0.647	(0.38)	0.493	(0.37)
Graphic Full	0.186	(0.17)	–	–	1.031**	(0.37)
Graphic Dual	–	–	0.518	(0.45)	-0.222	(0.43)
Nurse Full	0.612	(0.34)	–	–	1.553**	(0.45)
Nurse Dual	–	–	2.108**	(0.68)	1.155*	(0.46)
Lev. Prel. Educ.	-0.057	(0.20)	0.502	(0.39)	0.183	(0.17)
Cert. Prel. Educ.	-0.414	(0.25)	-[1]	–	-0.026	(0.23)
Repeater	-0.103	(0.13)	-0.445	(0.31)	-0.079	(0.12)
Work. Exp.	0.089	(0.11)	0.077	(0.08)	0.022	(0.06)
Lab. Market.Exp.	-0.051**	(0.01)	-0.001	(0.01)	-0.067**	(0.00)
Lab. Mark.Exp.2	-0.009	(0.01)	-0.001	(0.004)	0.024**	(0.00)
Job level	-0.580**	(0.05)	-0.941**	(0.14)	-0.615**	(0.05)
Sector	0.010	(0.14)	-0.159	(0.36)	-0.073	(0.13)
Randstad	0.145	(0.14)	0.581*	(0.26)	0.248*	(0.12)
Unempl. rate	-0.028	(0.23)	0.415	(0.41)	0.270	(0.20)
Army	-0.139	(0.15)	–	–	-0.149	(0.14)
-2 log L	3375.4		847.4		4623.5	
Chi-square	608.1		109.2		936.5	
d.f.	17		15		21	
N	1827		1150		2977	
% censored	84%		94%		88%	

* $p < .05$
** $p < .01$
[1] Not included in analysis due to estimation problems

other two types of mobility (horizontal mobility and demotion) were treated in this analysis as censored observations. The table presents estimates of the b-coefficients with their corresponding standard errors, as well as model statistics. The interpretation of the b-coefficient is rather straightforward. If b is the coefficient, computing 100(exp(b) – 1) gives the percentage change in the hazard with each one unit change in the explanatory variable (Allison, 1984).

In discussing the results, we will first look at the estimates for the total group. Here, we will concentrate on the effect of the particular type of training followed. To save computer time, in the analysis for the total group none of the variables were modelled as time dependent. For a discussion of the other explanatory variables we will therefore turn to the separate analyses for full-time and dual education. First, we will discuss the results which are similar in both analyses. Next, we will concentrate on the differences between the two models.

Graduates from the four courses in full-time education all have greater chances of getting promoted than the reference group (mechanical engineering in the dual system). For example, graduates of the mechanical engineering training in full-time education have a hazard of getting promoted which is 2.3 (=exp(.845)) times larger than that of the reference group. In the case of full-time nurse training, the hazard is even 4.7 times larger. The nurse training in the dual system is the only one that shows the same positive effect, a result that confirms our expectation for this type of training. The fact that graduates from full-time education have in general better chances of promotion, can only partly be attributed to the fact that their first jobs tend to have a relatively lower level than the jobs that graduates from the dual system hold when they leave the dual system, because the level of the job is controlled for. It seems that graduates of the dual system are more often to be found in dead-end jobs, where chances on promotion are only very limited, while graduates of the full-time education can more often be found on internal labour markets.

For graduates from both full-time and dual education, we find a positive effect of age. However, this effect is stronger for graduates of the dual system than for full-time education. For each additional year of age, the hazard is multiplied with 2.1 in the case of full-time education and with 3.2 in the case of dual education. It should be noted, however, that for graduates of the dual system the significant negative effect of the squared term indicates that the promotion chances will decrease after the age of 26.

For both groups we also find a negative effect of the job level. If you work in a high level job, chances of reaching a still higher level decreas-

es. Again this effect is most apparent for graduates of the dual system. For each additional level of job, the hazard of getting promoted is decreased with 44% in the case of full-time education and with 61% in the case of dual education.

Other results are not the same for both groups. For graduates of full-time education, we find a negative effect of labour force experience. This may seem puzzling at first sight, but as we shall see later, labour force experience also has negative effects on the other types of event for graduates of full-time education. This indicates that mobility for this group mainly takes place immediately after leaving education, a result in line with the job search theories. This mobility may involve promotion, horizontal mobility as well as decline of the job level.

For graduates from the dual system we find a positive effect of living in the western part of the Netherlands ('Randstad'). The chance of getting promoted in the Randstad is 1.8 times larger than in the rest of the Netherlands.

Table 3 presents the results of the analysis on horizontal mobility. This type of mobility is typical for the craftspecific segments of the labour market (Lutz & Sengenberger, 1974). This is not confirmed if we look at the types of training which show a high amount of mobility: nurse training in full-time education and civil engineering and graphic training in the dual system.

The separate models show partly similar results. In both analyses we find decreasing effects of labour force experience on the mobility rate, with relatively high mobility rates at the early stages of the occupational career, especially for graduates from full-time education. Each additional month of experience reduces the hazard with a few per cent. Mobility is also more likely to occur if one works in the western part of the Netherlands ('Randstad'). Finally, we see that mobility is higher if one works in the sector that one is trained for, especially for graduates from the dual system. Working in your own sector multiplies the hazard with 1.8 in the case of full-time education and with 2.9 in the case of dual education.

In other respects the results between the two groups differ. In the analysis on graduates from full-time education, females show a higher rate of horizontal mobility than males. Having repeated class also decreases the chances of this group on horizontal mobility, as well as having served the army.

With respect to the graduates of the dual system, we find that high general unemployment rates go together with high mobility rates. This could indicate that in times of high unemployment, people are more likely to have temporary jobs. Finally, we see the same age effects as before: the

Table 3. Horizontal Mobility.

Explanatory variables	full-time education		dual education		total group	
	b	se	b	se	b	se
Male	-0.560*	(0.19)	-0.249	(0.28)	-0.428**	(0.15)
Age	0.234	(0.24)	0.499**	(0.18)	-0.021	(0.10)
Age 2	-0.001	(0.01)	-0.010**	(0.00)	0.001	(0.00)
Mech. Eng. Full	–	–	–	–	0.211	(0.20)
Civ. Eng. Full	-0.227	(0.15)	–	–	0.014	(0.21)
Civ. Eng. Dual	–	–	0.697**	(0.18)	0.695**	(0.18)
Graphic Full	-0.081	(0.15)	–	–	0.265	(0.20)
Graphic Dual	–	–	0.538**	(0.20)	0.843**	(0.20)
Nurse Full	0.320	(0.22)	–	–	0.450*	(0.24)
Nurse Dual	–	–	0.552	(0.33)	0.286	(0.24)
Lev. Prel. Educ.	-0.048	(0.16)	-0.028	(0.16)	0.011	(0.11)
Cert. Prel. Educ.	-0.146	(0.23)	-0.109	(0.20)	-0.065	(0.15)
Repeater	-0.209*	(0.10)	0.202	(0.12)	0.039	(0.08)
Work. Exp.	-0.060	(0.08)	0.050	(0.03)	0.004	(0.03)
Lab. Market. Exp.	-0.035**	(0.01)	-0.017**	(0.00)	-0.054**	(0.00)
Lab. Mark. Exp.2	-0.013*	(0.01)	0.003	(0.00)	0.019**	(0.00)
Job level	0.161**	(0.04)	-0.014	(0.08)	0.130**	(0.04)
Sector	0.611**	(0.13)	1.081**	(0.29)	0.672**	(0.12)
Randstad	0.402**	(0.10)	0.433**	(0.11)	0.443**	(0.07)
Unempl. rate	0.069	(0.17)	1.428**	(0.18)	0.922**	(0.12)
Army	-0.590**	(0.10)	–	–	-0.604**	(0.13)
-2 log L	6106.7		4589.1		11894.3	
Chi-square	618.6		245.5		885.4	
d.f.	17		16		21	
N	1827		1150		2971	
% censored	73%		67%		71%	

* $p < .05$
** $p < .01$

chances on mobility increase until the age of 25, and then they decrease.

Table 4 presents the results of the analysis on facing a decline in job level. As can be seen in the analysis for the total group we find no significant effects of the type of training followed: none of the types of training deviates significantly from the rest.

Working outside the sector for which one is trained, increases the risk of a decline in job level. Notably, this risk is greatest for graduates from the dual system. Working outside the sector multiplies their chance of facing a decline in job level with 4.5, whereas for graduates from full-

Table 4. Decline of Job Level.

Explanatory variables	full-time education		dual education		total group	
	b	se	b	se	b	se
Male	-0.409	(0.32)	0.248	(0.65)	-0.130	(0.29)
Age	0.885	(0.51)	-0.151	(0.30)	-0.191	(0.24)
Age2	-0.018	(0.01)	0.002	(0.01)	0.004	(0.01)
Mech. Eng. Full	–	–	–	–	0.040	(0.41)
Civ. Eng. Full	-0.231	(0.22)	–	–	-0.192	(0.42)
Civ. Eng. Dual	–	–	1.059**	(0.39)	0.712	(0.38)
Graphic Full	0.295	(0.24)	–	–	0.173	(0.41)
Graphic Dual	–	–	0.350	(0.46)	0.529	(0.46)
Nurse Full	-0.410	(0.37)	–	–	0.392	(0.49)
Nurse Dual	–	–	0.033	(0.71)	-0.237	(0.51)
Lev. Prel. Educ.	-0.812*	(0.37)	-0.181	(0.42)	-0.378	(0.26)
Cert. Prel. Educ.	0.050	(0.46)	1.772	(1.03)	0.565	(0.39)
Repeater	-0.108	(0.17)	0.235	(0.29)	-0.024	(0.15)
Work. Exp.	0.051	(0.13)	0.058	(0.07)	-0.003	(0.06)
Lab. Market. Exp.	-0.090**	(0.01)	-0.022**	(0.01)	-0.082**	(0.01)
Lab. Mark. Exp. 2	0.005	(0.01)	0.006*	(0.00)	0.029**	(0.00)
Job level	0.538**	(0.07)	0.666**	(0.16)	0.553**	(0.06)
Sector	-0.444*	(0.17)	-1.507**	(0.29)	-0.727**	(0.15)
Randstad	-0.152	(0.18)	1.010**	(0.26)	0.220	(0.15)
Unempl. rate	0.215	(0.30)	1.221**	(0.39)	0.759**	(0.24)
Army	-0.317	(0.21)	—	–	-0.384	(0.20)
-2 log L	1914.5		843.2		3107.2	
Chi-square	349.5		111.6		478.1	
d.f.	17		16		21	
N	1827		1150		2971	
% censored	91%		94%		92%	

* $p < .05$
** $p < .01$

time education the chance is multiplied with 1.6. Again, we see an effect of the level of the job from which transition is to take place: working in low level jobs decreases the chances of facing a decline in job level. As in the former analyses, we see that labour market experience decreases the chances of a decline in job level, especially for graduates from full-time education. For graduates of full-time education, we find a negative effect of the level of preliminary education. Having completed a higher level of preliminary education decreases the hazard of facing a decline in job level with 56%.

Graduates of the dual system are vulnerable to changes in general labour market conditions. In times of high unemployment rates, their chances of facing a decline in job level increases: for every per cent increase in general unemployment the hazard of demotion is multiplied with 3.4. Surprisingly, we find a positive effect of living in the western part of the Netherlands. This indicates that living in the 'Randstad' not only increases the chances of promotion or horizontal mobility, but also the chances of demotion. Overall mobility is largest in the 'Randstad', no matter what the direction is. As we shall see below, this is confirmed by the positive effect which living in the 'Randstad' has on employment chances.

Table 5 presents the separate analysis on the chances of getting unemployed. We counted 384 unemployment spells in the occupational careers, 228 spells for graduates of full-time education and 156 spells for graduates from dual education[5]. Having followed a civil engineering training definitely increases the chance of getting unemployed, especially for graduates from dual education.

We find decreasing effects of labour force experience on the chances of getting unemployed. This effect is most visible for the graduates of full-time education, again underlying the unstable period they face after leaving education. The significant effect of the squared term indicates that the risks of getting unemployed is especially high in the early start of the career.

Surprisingly, we find a difference in the effect of the general unemployment situation on the chances of getting unemployed. For graduates of dual education, high general unemployment rates increase the risk of getting unemployed oneself – as can be expected. For graduates of the full-time system, however, the reverse is true. Apparently, this effect coincides with some other factors, not included in the present analysis.

Also unexpected is the positive effect for graduates of the dual system of working in the sector one is trained for. Working inside the sector for which one is trained multiplies the hazard of getting unemployed with 2.7. Obviously, this group faces a dilemma: working in the sector for which one is trained increases the chances of getting unemployed, but working outside the sector increases the chance of a decline in job level (see Table 4). For this group we also find that having repeated class during preliminary education increases the hazard of getting unemployed. Finally, we can see the same age effects as in the first two analyses: the chances of getting unemployed increase until the age of 23 and then they decrease.

Table 5. Getting unemployed.

Explanatory variables	full-time education		dual education		total group	
	b	se	b	se	b	se
Male	-0.247	(0.29)	-0.674	(0.67)	-0.203	(0.26)
Age	0.525	(0.41)	0.639*	(0.29)	-0.223	(0.14)
Age2	-0.006	(0.01)	-0.014*	(0.01)	0.006	(0.00)
Mech. Eng. Full	–	–	–	–	-0.127	(0.30)
Civ. Eng. Full	0.568**	(0.17)	–	–	0.480	(0.30)
Civ. Eng. Dual	–	–	0.903**	(0.27)	0.974**	(0.27)
Graphic Full	-0.015	(0.22)	–	–	0.046	(0.31)
Graphic Dual	–	–	-0.684	(0.37)	-0.291	(0.37)
Nurse Full	-0.105	(0.36)	–	–	-0.584	(0.41)
Nurse Dual	–	–	-0.697	(0.71)	-0.170	(0.41)
Lev. Prel. Educ.	-0.380	(0.24)	-0.211	(0.33)	-0.224	(0.19)
Cert. Prel. Educ.	-0.192	(0.31)	-0.027	(0.41)	0.038	(0.25)
Repeater	-0.064	(0.15)	0.533**	(0.19)	0.299**	(0.11)
Work. Exp	-0.128	(0.12)	0.013	(0.05)	-0.073	(0.05)
Lab. Market. Exp.	-0.105**	(0.01)	-0.029**	(0.01)	-0.078**	(0.00)
Lab. Mark. Exp.2	0.028**	(0.01)	0.008**	(0.00)	0.027**	(0.00)
Job level	-0.003	(0.05)	-0.054	(0.14)	-0.011	(0.05)
Sector	0.188	(0.16)	0.998*	(0.43)	0.281	(0.15)
Randstad	-0.187	(0.17)	-0.466*	(0.21)	-0.239	(0.13)
Unempl. rate	-0.509*	(0.25)	0.670*	(0.29)	0.333	(0.18)
Army	-0.446	(0.18)	–	–	-0.502	(0.18)
-2 log L	2710.9		1851.4		5047.6	
Chi-square	471.1		148.0		691.6	
d.f.	17		16		21	
N	1827		1150		2971	
% censored	88%		86%		87%	

* $p < .05$
** $p < .01$

CONCLUSIONS

In this article we explored the differences in the labour market careers between graduates from the dual system and from full-time vocational education. This analysis is relevant with respect to the current debate in educational policy towards 'dualization' of the educational system. This dualization is expected to decrease skill shortages on the labour market, both in a quantitative and a qualitative sense.

The Netherlands presents an interesting case, because in this country, unlike most other countries, both systems coexist. This gives us a good opportunity to investigate the differences in labour market effects. As a matching job is a prerequisite for entering the dual system, the focus of the analysis will be on short term as well as long term differences.

Following the job search theories, we stated that the labour market entry of graduates from full-time vocational tracks is likely to be less stable than the careers of graduates from the dualized system. In the long run, however, these differences were expected to diminish. The results clearly point out that this is the case. The occupational careers of graduates from full-time education show a lot of mobility immediately after leaving school. This mobility may involve promotion, horizontal mobility as well as decline of the job level. The mobility is very likely to be accompanied by a period of unemployment especially in the period immediately after leaving school.

Next, we expected that graduates from the dual system would run a greater risk of skill obsolescence and consequently underemployment. This risk is higher because training in the dual system is more directed at mastery of specific vocational skills, while the full-time tracks focus more on general learning abilities. We expected this risk to be greatest in the metal sector and least in the health care.

If we only look at the chance of getting promoted, the results are in favour of the full-time tracks. In general, graduates from the dual system have less chances of getting promoted, except for the nurse training, where chances of facing promotion are comparable to the ones of the full-time track.

Of course, for graduates from the dual system a part of the occupational career has already taken place before entering the dual system, but nevertheless their careers apparently involve many so-called dead-end jobs. This is confirmed by the strong negative effect of job level on the promotion chances for this group: once they have reached jobs at a medium level, the promotion chances decrease. The age effects also point in the same direction: upward mobility increases until the age of 26 and then it decreases.

We find no evidence indicating that graduates from the dual system are more vulnerable to skills obsolescence. They do not face decline in job level more often than graduates from the full-time tracks, even in sectors where technological change has been rapid. There is however evidence that graduates from the dual system are less successful in transferring their skills to other sectors: working outside the sector for which one is trained increases the chance of demotion.

In other respects, we have found indications that graduates from the dual system are more vulnerable to changes in the general labour market situation. In times of high unemployment, they are more likely to experience horizontal and downward mobility or a period of unemployment. For graduates of full-time education, we did not find a similar dependence on general labour market conditions. This result is even more meaningful if one realises that graduates from the dual system have had more chances of reaching a stable position on the labour market, while graduates from the full-time tracks are relatively new on the labour market.

What conclusions may be drawn from these results and what are the implications for educational policy? The results are not unambiguously in favour of either of the two systems. The wheels of fortune for the full-time tracks offer bigger prizes (in terms of promotion chances), but they are accompanied with higher risks of dropping out at the first rounds (unstable labour market entry). The dual system on the other hand offers save play (stable careers), but only small prizes (many dead-end jobs). Moreover, you are allowed to play at only one table at a time (only in the sector for which you are trained). Changing tables is accompanied with a considerable loss, because the transfer value of the acquired skills is not very high. Given the vulnerability of the dual system to general labour market conditions, both in terms of the labour market careers of their graduates, as well as in terms of sufficient supply of student placements, there is a need for both systems to coexist. This does not preclude experimenting with integration. However, these experiments should run both ways. Full-time education can learn from the dual system how to improve the transition from education to the labour market. The dual system on the other hand can learn from full-time education how to improve the transfer value of the skills that are acquired by their students.

NOTES

1. The selected courses are: mechanical engineering in intermediate vocational education ('MTS-Werktuigbouw') and dual education, secondary level ('SOM Voortgezette opleiding verspaning/constructie'); civic engineering in intermediate vocational education ('MTS-Bouwkunde') and dual education, secondary level ('SVB Voortgezette opleiding Banktimmeren'); graphic training in intermediate vocational education ('MTS-Grafische techniek, technische richting') and dual education, secondary level ('GOC Voortgezette opleiding grafisch'); nurse training in intermediate vocational education ('MBO-V') and dual education, secondary level ('Inservice opleiding verpleegkundige A').
2. In a number of cases the exact period of military service could not be obtained. Those people were left out of the analysis. Only people who served the military immediately

after leaving education or did not perform military service were included in the analysis. In the case of the dual system only a few graduates served the military forces and they were subsequently left out of the analyses.

3. Only graduates who have hold at least one job were included in the analysis. A total of 253 job spells from which the length could not be determined - while not censored - were also excluded from the analysis.
4. We note that this transition may include a period of unemployment between the two jobs. The chances of getting unemployed however are analysed separately.
5. Only unemployment spells following the first job were included in the analysis. Unemployment at the entry of the labour market occurs only with graduates of full-time education and is therefore excluded from the analysis.

REFERENCES

Allison, P.D. (1984). *Event history analysis.* Beverly Hills: Sage.

Allmendinger, J. (1988). *Career mobility dynamics. A comparative analysis of the United States, Norway and West-Germany.* Cambridge: Massachusetts.

Beun, B.D. et al. (1985). *Onderzoek functieveranderingen als gevolg van technologische ontwikkelingen, deel 1 en 2.* Productiviteitscentrum Metaalnijverheid: De Bilt.

Blossfeld, H.P. (1987). Karriereprozesse im Wandel der Arbeitsmarktstruktur. Ein dynamischer Ansatz Erklärung intragenerationaler Mobilität. *Mitteilungen aus der Arbeitsmarkt- und Berufsforschung, 20,* 74-88.

Blossfeld, H.P., Hamerle, A., & Mayer, K.U. (1986). *Ereignisanalyse. Statistische Theorie und Anwendung in den Wirtschafts- und Sozialwissenschaften.* Frankfurt, New York: Campus Verlag.

Bremer, W. (1986). *Flexibilisering van arbeid: mogelijkheden en effecten.* Den Haag: OSA.

COB/SER (1986). *Nieuwe technologieën: veranderingen in bedrijf en onderwijs. Onderzoeksrapport inzake de afstemming tussen nieuwe ontwikkelingen in beroepspraktijk en het informatica-onderwijs op MAVO, HAVO, LEAO, LHNO, LTO, MEAO, MTO, MLO en MDGO.* Den Haag: Author.

Engbers, L.A.M. (1987). *Grafische activiteiten in ontwikkeling.* Amsterdam: GOC.

Germe, J.-F. (1986). The evolution of the training/job relation and means of observation. In D.L. Parkes et al. (Eds.), *Education/training and labour market policy, III* (pp.132-142). Den Haag: SVO.

Glebbeek, A.C. (1988). De arbeidsmarktpositie van opleidingen. *Tijdschrift voor Arbeidsvraagstukken, 4,* 75-89.

Huijgen (1989). De kwalitatieve structuur van de werkgelegenheid in Nederland, deel III. *OSA-voorstudie nr. 33.* Den Haag: OSA.

Kayzel, R. (1985). *Het opleidingsbeleid in de grafische industrie.* Den Haag: OSA.

Kayzel, R., & Wel, J. van (1985). *Veranderingen in de beroepspraktijk van vakmensen en gevolgen voor de beroepsopleidingen. Verslag van een onderzoek.* Den Haag: SVO.

Lutz, B., & Sengenberger, W. (1974). *Arbeitsmarktstrukturen und öffentliche Arbeitsmarktpolitik.* Göttingen: Otto Schwartz & Co.

McKenna, C.J. (1985). *Uncertainty and the Labour Market. Recent Developments in Job Search Theory.* Brighton: Wheatsheat.

Ministry of Social Affairs and Employment (1990). *Rapportage Arbeidsmarkt 1989.* Den Haag: Author.

OSA, CPB (1988). *Werkgelegenheidsvooruitzichten voor de Nederlandse machine-industrie.* Den Haag: OSA.

Poutsma, E., & Zwaard, A. (1987). Automatisering en arbeidsinhoud. *Tijdschrift voor Arbeidsvraagstukken, 1,* 16-26.

Raffe, D. (1988). The story so far: research on education, training and the labour market from the Scottisch Surveys. In D. Raffe (Ed.). *Education and the youth labour market* (pp. 40-65). London: Falmer Press.

Thurow, L.C. (1975). *Generating Inequality.* New York: Basic Books.

Topel, R.H., & M.P. Ward (1988). *Job mobility and the careers of young men.* Working Paper NBER, no 2649, Cambridge (MA).

Velden, R. van der, Akkermans, D., Van der Heul, H., & Van der Zee, F. (1989). *De lange arm van het onderwijs. Een vergelijkend onderzoek naar de lange-termijn effecten van opleidingen bij MBO en Leerlingwezen. Eindrapport.* Groningen: RION.

Viscusi, H.K. (1983). Employment Relationships with Joint Employer and Worker Experimentation. *International Economic Review, 24,* 313-322.

APPENDIX 1. LIST OF EXOGENOUS VARIABLES

Male	1	if the graduate is a male,
	0	if female
Age*	1	6,..,40 age in years
Mech. Eng. Full	1	if the graduate completed mechanical engineering in full-time education,
	0	if otherwise
Civ. Eng. Full	1	if the graduate completed civil engineering in full-time education,
	0	if otherwise
Civ. Eng. Dual	1	if the graduate completed civil engineering in dual system,
	0	if otherwise
Graphic Full	1	if the graduate completed a graphic training in full-time education,
	0	if otherwise
Graphic Dual	1	if the graduate completed a graphic training in dual system,
	0	if otherwise
Nurse Full	1	if the graduate completed a nurse training in full-time education,
	0	if otherwise
Nurse Dual	1	if the graduate completed a nurse training in dual system,
	0	if otherwise
Lev.Prel.Educ.	1	if the preliminary education is intermediate general (HAVO), higher general (VWO) or intermediate vocational (MBO)
	0	if the preliminary education is lower general (MAVO) or lower vocational (LBO)
Cert. Prel.Educ.	1	if the graduate has a certificate of the preliminary education,
	0	if otherwise
Repeater	1	if the graduate has repeated at least one class during his preliminary education,
	0	if otherwise
Work Exp.	1,..6	years of work experience before the end of the vocational education

Lab. Market Exp.*	1,..,96	labour market experience since the start of the first job spell (in months)
Job level	1,..,7	the level of the job which the graduate leaves, according to the classification of Huijgen (1989)
Sector	1	if the graduate is working in the sector for which he is trained,
	0	if otherwise
Randstad	1	if the graduate is living in the 'Randstad' (Western part of the Netherlands),
	0	if otherwise
Unempl. rate	5,..,17.5	Unemployment as a percentage of the dependent labour force in the Netherlands at the start of the job spell of the graduate
Army**	1	if the graduate completed military service immediately after completion of the education and before the start of the first job spell,
	0	if otherwise

* Modelled as a time dependent variable in a linear and squared form.

** Only for graduates from full-time education. Graduates from the dual system who served the military were excluded from the analysis, as were graduates from full-time education who served the military after their first job.